# EMS Quality Improvement

Enhancing EMS Quality Improvement initiatives using centralized prehospital data systems

## Introduction and Objectives

- Enhance understanding of MI-EMSIS data management at a MCA level
- Integrating and presenting prehospital and outcome data
- Development of measurable Core Measures- Group Activity (MI-EMSIS Tutorial)
- Increasing data quality, monitoring, and managing prehospital data within your MCA.

## Panel Introduction

- Joe Williams, BS, Paramedic— Quality Improvement, Privacy and Compliance Coordinator, Medstar Ambulance
- Bonnie Kincaid, PhD- Executive Director, Oakland County Medical Control Authority
- Luke Bowen, BA, EMTP, IC- EMS Quality Improvement Coordinator, Macomb County Medical Control Authority
- Kevin Putman, MSA- Michigan EMS State Data Manager

## Background of MI-EMSIS

- The MDCH is required by Part 209 to develop, coordinate and [illegible] emergency medical services system, to implement and operate a statewide trauma care system, to develop and [illegible] emergency medical services and personnel, to promulgate rules, and to collect data as necessary to assess the need [illegible] emergency medical services throughout the state pursuant to the Peer Review Statute. MCL 333.20910(l).

Legalese

- Vendor Selected- Imagetrend- Largest provider of statewide EMS Data Repositories in the US.
- MI-EMSIS Implemented in 2009- All providers required to collect and begin submitting data as of May 15, 2009.
- Training on the system for MCA's was provided as part of the initial implementation

## MI-EMSIS Data Quality

- Many MCA's made an initial attempt to use MI-EMSIS for CQI Efforts in their jurisdictions.
- Data quality issues were identified early on when multiple providers were reporting on multiple different systems.
- Single source systems were not without issues.
- Data quality and accuracy was overlooked
- Many MCA's reverted back to the old ways of requiring LSA's to submit periodic CQI Reports thus reducing emphasis MI-EMSIS.

## Data Quality

- Garbage In =====> Garbage Out
- Data Mapping was an unforeseen issue
- The transition to electronic formats effectively de-standardized System Wide Patient Care reporting processes.
- Suddenly, not everyone was using the same form, like in previous years.
- NEMSIS Gold Certified did not prevent de-standardization.

## Data Quality and Management

- Much of the information may be being sent from the LSA's and just not mapped correctly
- Some data may not be collected by certain LSA's
- Certain Vendors have issues when sending certain types of Data- Example-Possible Injury.
- The MCA has the authority and responsibility to ensure data accuracy within their EMS system.

## MCA Data Collection

## STEMI Project

MCMCA
Macomb County Medical Control Authority

## DIRECT MCA Data Collection

- In addition to MI-EMSIS data collection, some MCA's choose to do specific, targeted data collection.
- Macomb County felt the need to assess STEMI care, and used the approach of AHA Mission Lifeline certification requirements as the assessment metric

## Objectives

- Review components of a STEMI System of Care: EMS, ER, Cath Lab
- Discuss time interval goals including 90 minute EMS call to balloon inflation
- Overview data collection and present sample data

## STEMI System of Care

- A STEMI "System of Care" reflects the cooperative efforts of EMS, the emergency center, and the cardiology team/cardiac catheterization lab to provide rapid STEMI recognition, cath lab activation, and ultimately the shortest time interval possible from STEMI onset (911 call) to revascularization (balloon inflation).

## D2B: Door to Balloon

- There have been no significant changes to the 60 minute (AHA=90) time interval goal from ED arrival to revascularization
- Hospitals have internal processes, some paired with EMS, to reduce the D2B time*
  - Cath lab activation prior to EMS arrival
  - Rapid EKG acquisition in ED (if deemed necessary)
  - Cath lab staffing/call in procedures

* NOTE: Referral centers goal is 30 minutes door to needle

## The STEMI System of Care Standard

- The American Heart Association recognizes STEMI Systems of Care with their Mission Lifeline® program.


## Mission Lifeline

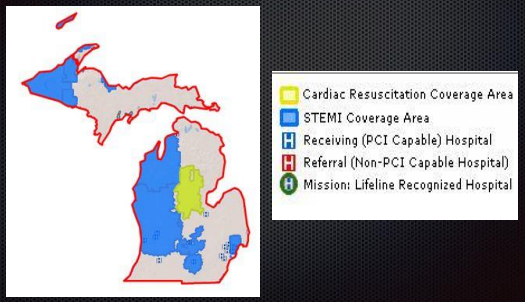
- Many areas and regions have well developed STEMI Systems of Care, but have not applied for nor achieved Mission Lifeline ® recognition.

## Objectives


## www.heart.org/missionlifeline/

- Almost 250,000 Americans experience STEMI, the deadliest form of heart attack, each year
- Thirty percent of STEMI patients fail to receive percutaneous coronary intervention (PCI) or thrombolytic therapy
- Of those who receive PCI, only 40 percent are treated within the door-to-balloon timeframe of 90 (60) minutes, recommended by the American Heart Association
- Of those who receive thrombolytic therapy, fewer than half are treated within the recommended door-to-needle timeframe of 30 minutes

## Mission LifeLine in Michigan




## EMS Role

- The PRIMARY roles for EMS in helping to achieve consistent 911 call to revascularization time intervals of ≤ 90 minutes are:
  - Early recognition of signs/symptoms of STEMI
  - Shortest interval feasible to acquire first 12-lead EKG
    - Then rapid transmission or radio call activation
  - Working cooperatively with local hospitals and cardiology programs to have consistent cath lab activation PRIOR to EMS arrival

## To Improve a Process or System….

- One must know the current state of affairs
- In Macomb County, we began collecting STEMI data almost two years ago
- We wanted to see if:
  - We were meeting the 60 minute D2B time and the 90 minute 911 call to balloon time
  - We could identify specific time intervals which could/should be improved anywhere within that spectrum

## Macomb STEMI Data Collection

**Elements Collected**

| Date | MRN | Pain Onset | EMS Notified | EMS Scene | EKG Sent | EMS Trans | EMS Hosp | Hosp EKG | Lab Notified | Direct Lab Y/N | Table Time | Inflate Time |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Reported Time Intervals**

| EMS Response Time | EMS Arrive to EKG | 911 Call to Arrive ED | ED Arrive to 1st EKG | ED Arrive to Cath Lab Notify | Door to Inflate | 911 Call to Inflate |
|---|---|---|---|---|---|---|

| Hospital (Blinded/Re-Ordered) | SAMPLE MONTH (Minutes) EMS Resp Time | EMS Arrive to EKG Transmit | 911 Call to Arrival ED | ED Arrive to 1st EKG | ED Arrive to Cath Lab Page | Door-Inflate | 911-Inflate |
|---|---|---|---|---|---|---|---|
| A | 8.0 | 7.5 | 34.0 | 4.5 | -2.0 | 52.0 | 86.0 |
| B | 5.0 | 6.0 | 28.0 | 10.0 | 16.0 | 62.0 | 90.0 |
| C | 6.8 | 9.3 | 29.4 | 9.5 | -1.8 | 49.6 | 79.0 |
| D | 6.8 | 8.2 | 25.8 | 13 (1) | -7.2 | 56.7 | 54.5 |
| E | 7.8 | 9.8 | 42.6 | 5.8 | 1.6 | 67.6 | 110.2 |
| SYSTEM AVERAGE | **6.8** | **8.2** | **32.0** | **8.6** | **1.3** | **46.3** | **83.9** |

| Hospital | 2013 Total | TOTAL DATA SET |
|---|---|---|
| A | 23/89.30 | 41/83.80 |
| B | 41/77.49 | 76/79.03 |
| C | 21/84.97 | 53/85.58 |
| D | 44/76.59 | 68/83.18 |
| E | 52/91.18 | 106/89.21 |
| | **181/83.91** | **282/84.16** |

## Summary

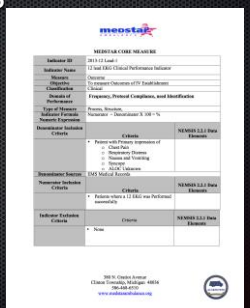
- Requiring specific data collection outside of record submission to MI-EMSIS may be viewed as a burden to the reporting parties
- Create a culture of **C**ontinuous **Q**uality **I**mprovement where the value of introspective quality analysis is used to improve patient care and patient outcomes
- STAKEHOLDERS: achieve buy-in at all levels

## Core Measures

- Core Measures- currently in development with the State EMS and Trauma Data Committees.
- Provides standardized structure to measuring performance.
- Editable template can be altered to fit each organizations needs
- Can be used to look at structure, process, outcome, and system performance.
- With the NEMSIS 2.2.1 Dataset, system, process, and structure measures are much easier to obtain than outcome measures.
- Outcome measures will be more robust in the NEMSIS 3 Data Set.

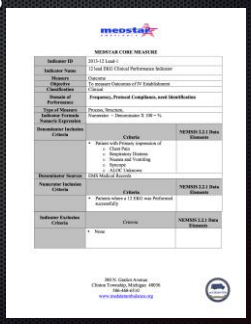
## Core Measures

- Each is Numbered
- Uses inclusion and exclusion criteria
- Identifies the specific NEMSIS data element needed to complete the analysis
- Identifies statistical measures to be conducted and frequency



# Core Measures

- Important things to remember:
  - Only measure what is measurable
  - Start small
  - Keep it as simple as possible
  - Answer one question at a time
  - **It's just a fraction!!!!!**



meostar

MEDSTAR CORE MEASURE

| | |
|---|---|
| Indicator ID | 2013-12 Load-1 |
| Indicator Name | 12 lead EKG Clinical Performance Indicator |
| Measure Objective | Outcome<br>To measure Outcomes of IV Establishment |
| Classification | Clinical |
| Domain of Performance | Frequency, Protocol Compliance, need identification |
| Indicator Type | Process, Structure, |
| Indicator Numerator Numeric Expression | Numerator ÷ Denominator X 100 = % |
| Denominator Inclusion Criteria | Criteria: NEMSIS 3.2.1 Data Elements<br>• Patient with Primary impression of<br>○ Chest Pain<br>○ Respiratory Distress<br>○ Nausea and Vomiting<br>○ Dizziness<br>○ ALOC / Syncope |
| Denominator Sources | EMS Medical Records |
| Numerator Inclusion Criteria | Criteria: NEMSIS 3.2.1 Data Elements<br>• Patients where a 12 EKG was Performed successfully |
| Indicator Exclusion Criteria | Criteria: NEMSIS 3.2.1 Data Elements<br>• None |

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# Canned Reports MI-EMSIS

- Response Times
- Turn Times
- Call Volumes by Hour
- Trauma Scene Times

# Custom Reports

- **If you can think of it…. And it's a data point you are collecting….. You can do it.**

# Data Quality Management

- Ensuring accurate data requires strong project management.
- Buy in from MCA's and LSA's are a must for success.
- QI and data must be brought out from behind closed doors and involve stakeholders other than just PSRO
- QI initiatives can be about prehospital data.

# EMS Quality Improvement Plan (EQIP)

MISSION: For the MCA to provide direction to Life Support Agencies (LSA's) with respect to patient care-based quality management and performance improvement.

PURPOSE: To provide a systematic approach for LSA's and the MCA to create a joint effort for developing a Quality Improvement Plan.

# EMS Quality Improvement Plan (EQIP)

- LSA creates a QI Team
- LSA completes an Annual QI Plan
- LSA QI Team performs regular Data Reviews
- LSA sends summary reports to the MCA's PSRO

## Documentation: Education vs. Data

- MI-EMSIS data will only be valuable if two components are working together.
  - The EMS providers are trained appropriately
  - e-PCR Vendors data is clean going into MI-EMSIS
- MCA's and LSA's must work together.
- Run Times Data Test.

## Questions

- AMA- Ask Me Anything…..